

But this creates a chicken-or-egg situation; when an ad is new, there won't be any users who have already been exposed to the ad, so the system will be unable to find users who are similar to Joe and who it has prior knowledge about with respect to that ad.

So, for each new ad, there will have to be a period when ACF techniques are not the sole determinant of which ad is displayed; instead, such ads will be displayed either according to a fixed schedule or randomly. Moreover, a particular embodiment of this invention could also choose to continually have a probability that the ad shown a user at any given time might be randomly chosen rather than chosen by ACF. There is a tradeoff here: the more ads are randomly presented, a) the more data the system will be able to collect for the ACF engine, increasing the accuracy of the engine; and b) the more frequently users will be exposed to random ads that are not relevant to their interests.

The desired proportion of displaying ads according to the ACF output relative to displaying ads randomly or according to a fixed schedule can be determined by measuring such factors as overall system-wide number of responses to ads in a given period of time (which should ideally be high) and polling users on their satisfaction with the system. A mathematical analysis could also be used in predicting the best proportion. A simple and sensible starting point would be to simply assign 10% of viewing time to randomly chosen ads.

The various steps described hereinabove are desirably implemented by programming them into functions incorporated within Web Server software or in application programs used in conjunction with such software. Programmers of ordinary skill in the field can implement them using customary programming techniques in languages such as C, Visual Basic, Java, Perl, C++, and the like.

Having thus described the invention, what it is desired to claim and thereby protect by Letters Patent is:

1. An automated system in an interactive communication medium for selectively displaying one or more advertisements to a subject comprising:

a collaborative filtering means for determining a subject's community, using information derived from the activities of the subject in the interactive communication medium, and

means for determining which of the one or more advertisements to show the subject based on characteristics of the subject's community, wherein the means for determining which of the one or more advertisements to show the subject based on characteristics of the subject's community includes means for displaying a new advertisement for a training period and means for determining whether a high or low proportion of members of the subject's community have viewed further information about the advertisement.

2. The system of claim 1, wherein the information derived from the activities of the subject comprises information selected from at least one of the following:

- (1) an identity of one or more sites the subject has visited;
- (2) a frequency with which the subject visits each of the one or more sites;
- (3) a nature of the content at the visited sites;
- (4) an identity of items purchased by the subject;
- (5) a price of any items purchased by the subject;
- (6) ratings supplied by the subject;
- (7) a selection of advertisements the subject has chosen to view further information about; and
- (8) a selection of advertisements in which the subject has indicated disinterest.

3. The system of claim 1, further comprising means for recording said information in a tracking database.

4. The system of claim 3, wherein said means for recording said information in a tracking database includes at least a portion of a computer program being executed by a processor which the subject used to visit the sites.

5. The system of claim 4, wherein the at least portion of a computer program being executed by the processor which the subject used to visit the sites is selected from at least one of the following: an in-line application with the ability to write directly to the subject's computer, a screensaver working in conjunction with a browser, and software incorporated in a browser.

6. The system of claim 1, wherein the means for determining which advertisements to show the subject based on characteristics of the subject's community includes means for associating a demographic profile with the community and means for associating a demographic profile with specific advertisements.

7. The system of claim 1, wherein the means for determining which advertisements to show the subject based on characteristics of the subject's community is embodied in software being executed by a processing system used by the subject.

8. A computer implemented process in an interactive medium for selectively displaying one or more advertisements to a subject comprising the steps of:

- (a) tracking activities of the subject in the interactive medium;
- (b) deriving information from the activities of the subject identified in said tracking step;
- (c) determining a community of the subject using all or a portion of the information; and
- (d) determining which of the one or more advertisements to present to the subject based on the subject's community, wherein said step of determining which advertisements to show the subject based on characteristics of the subject's community includes the steps of:
 - displaying a new advertisement for a training period; and
 - determining whether a high or low proportion of members of the subject's community have chosen to view further information about the advertisement.

9. The process of claim 8, wherein the information derived from the activities of the subject comprises information corresponding to at least one of:

- (1) an identity of one or more sites the subject has visited;
- (2) a frequency with which the subject visits each of the one or more sites;
- (3) a nature of the information content at the visited sites;
- (4) an identity of items purchased by the subject;
- (5) a price of any items purchased by the subject;
- (6) ratings supplied by the subject;
- (7) a selection of advertisements the subject has chosen to view further information about; and
- (8) a selection of advertisements in which the subject has indicated disinterest.

10. The process of claim 9, wherein the process further comprises the step of recording said information in a tracking database.

11. The process of claim 10, wherein said step of recording such information in a tracking database uses at least a portion of a computer program being executed by a processor which the subject used to visit the sites.

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12. The process of claim 11, wherein the at least portion of a computer program being executed by the processor which the subject used to visit the sites is selected from at least one of the following: an in-line application with the ability to write directly to the subject's computer, a screen-saver working in conjunction with a browser, and software incorporated in a browser.

13. The process of claim 10, wherein the step of recording said information in a tracking database is under Common Gateway Interface control.

14. The process of claim 8, wherein said step of determining which advertisements to show the subject based on the subject's community includes the steps of:

associating a demographic profile with the community;
and

associating a demographic profile with specific advertisements.

15. The process of claim 8, further comprising the step of filtering the information from said deriving step to provide filtered information.

16. The process of claim 15, further comprising the step of grouping the subject into a cluster formed of other subjects with similar communities.

17. A computer program product for selectively displaying at least one or more host based advertisements to a guest at a remote location comprising:

(a) a computer usable medium having computer readable program code means embodied therein for tracking activities of the guest at the remote location;

(b) computer readable program code means for deriving information from the activities of the guest identified in said tracking step;

(c) computer readable program code means for determining a community of the guest using all or a portion of the information; and

(d) computer readable program code means for determining which advertisements to present to the guest based on the guest's community, wherein the means for determining which advertisements to present the subject based on the guest's community includes computer readable program code means for displaying a new advertisement for a training period and computer readable program code means for determining whether a high or low proportion of members of the guest's community have chosen to view further information about the advertisement.

18. The computer program product of claim 17, wherein the information derived from the activities of the guest comprises information selected from at least one of the following:

- (1) an identity of one or more sites the guest has visited;
- (2) a frequency with which the guest visits each of the one or more sites;
- (3) a nature of the content at the visited sites;
- (4) an identity of items purchased by the guest;
- (5) a price of any items purchased by the guest;
- (6) ratings supplied by the guest;

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(7) a selection of advertisements the guest has chosen to view further information about; and

(8) a selection of advertisements in which the guest has indicated disinterest.

19. The computer program product of claim 17, wherein the product further comprises computer readable program code means for recording the information in a tracking database stored locally at the guest's remote location.

20. The computer program product of claim 17, further comprising readable program code means for filtering the information from said deriving step to provide filtered information.

21. The computer program product of claim 17, wherein a plurality of guests with similar communities are grouped into clusters.

22. The computer program product of claim 17, wherein a demographic profile is created for the guest based upon the information derived from the activities of the guest.

23. A computer program product for selectively displaying at least one or more host based advertisements to a guest at a remote location comprising:

(a) a computer usable medium having computer readable program code means embodied therein for tracking activities of the guest at the remote location;

(b) computer readable program code means for deriving information from the activities of the guest identified in said tracking step;

(c) computer readable program code means for determining a community of the guest using all or a portion of the information;

(d) computer readable program code means for determining which advertisements to present to the guest based on the guest's community; and

(e) computer readable program code means for displaying an advertisement, the computer readable program code means for displaying an advertisement responsive to the computer readable program code means for determining which advertisements to present the guest wherein the computer readable program code means for displaying displays the advertisement determined by the computer readable program code means for determining which advertisement to present the guest wherein the guest has the ability to reject the selected advertisement, whereby the rejected advertisement is replaced with a second selected advertisement determined by said computer readable program code means for determining which advertisement to present the guest.

24. The computer program product of claim 23, wherein the computer readable program code means for displaying displays the advertisements in a window of a display at the guest's remote location.

25. The computer program product of claim 24, wherein the advertisement displayed in the window is linked to an advertiser's site.

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